G ADD-ON, DIGITAL, SIEVE, GENERAL PERIODICAL, AND NON-ARITHMETIC SEQUENCES

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Abstract:
Other new sequences are introduced in number theory, and for each one a general question: how many primes each sequence has.

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Introduction.
In this paper is presented a small survey on fourteen sequences, such as: G Add-on Sequences, Sieve Sequences, Digital Sequences, Non-Arithmetic Sequences, recreational sequences (Lucky Method/Operation/Algorithm/Differentiation/Integration etc.), General Periodical Sequences, and arithmetic functions.

1) G Add-On Sequence (I)

Let G = {g1, g2, ..., gk, ...} be an ordered set of positive integers with a given property G.
Then the corresponding G Add-On Sequence is defined through

$$SG = \{a_i : a_1 = g_1,\ a_k = a_{k-1} 10^{1+\log_{10}(g_k)} + g_k,\ k >= 1\}.$$

H. Ibstedt studied some particular cases of this sequence, that he has presented to the FIRST INTERNATIONAL CONFERENCE ON SMARANDACHE TYPE NOTIONS IN NUMBER THEORY, University of Craiova, Romania, August 21-24, 1997.

a) Examples of G Add-On Sequences (II)

The following particular cases were studied:
a.1) Odd Sequence is generated by choosing

$G = \{1, 3, 5, 7, 9, 11, ...\}$, and it is:
1, 13, 135, 1357, 13579, 1357911, 13571113, ...
Using the elliptic curve prime factorization program we find the first five prime numbers among the first 200 terms of this sequence, i.e. the ranks 2, 15, 27, 63, 93.
But are they infinitely or finitely many?

a.2) Even Sequence is generated by choosing
$G = \{2, 4, 6, 8, 10, 12, ...\}$, and it is:
2, 24, 246, 2468, 246810, 24681012, ...
Searching the first 200 terms of the sequence we didn't find any n-th perfect power among them, no perfect square, nor even of the form 2p, where p is a prime or pseudo-prime.
Conjecture: There is no n-th perfect power term!

a.3) Prime Sequence is generated by choosing
$G = \{2, 3, 5, 7, 11, 13, 17, ...\}$, and it is:
2, 23, 235, 2357, 235711, 23571113, 2357111317, ...
Terms #2 and #4 are primes; terms #128 (of 355 digits) and #174 (of 499 digits) might be, but we couldn't check -- among the first 200 terms of the sequence.
Question: Are there infinitely or finitely many such primes?
(H. Ibstedt)

Reference:
[1] Mudge, Mike, "Smarandache Sequences and Related Open Problems", Personal Computer World, Numbers Count, February 1997.

2) Non-Arithmetic Progressions (I)

One of them defines the t-Term Non-Arithmetic Progression as the set:
$\{a_i : a_i$ is the smallest integer such that $a_i > a_{i-1}$, and there are at most t-1 terms in an arithmetic progression$\}$.
A QBASIC program was designed to implement a strategy for building a such progression, and a table for the 65 first terms of the non-arithmetic progressions for t=3 to 15 is given (H. Ibstedt).

Reference:
[1] Mudge, Mike, "Smarandache Sequences and Related Open Problems", Personal Computer World, Numbers Count, February 1997.

3) Concatenation Type Sequences

Let $s_1, s_2, s_3, ..., s_n, ...$ be an infinite integer sequence (noted by S). Then the Concatenation is defined as:

$$s_1, \overline{s_1 s_2}, \overline{s_1 s_2 s_3}, \ldots .$$

H. Ibstedt searched, in some particular cases, how many terms of this concatenated S-sequence belong to the initial S-sequence.

4) Partition Type Sequences

Let f be an arithmetic function, and R a k-relation among numbers.
How many times can n be expressed under the form of;
$n = R(f(n_1), f(n_2), \ldots, f(n_k))$,

for some k and $n_1, n_2, \ldots, n_k$ such that $n_1 + n_2 + \ldots + n_k = n$?

Look at some particular cases: How many times can be n express as a sum of non-null squares (or cubes, or m-powers)?

5) The Lucky Method/Algorithm/Operation/Differentiation/Integration/etc.

Generally: The Lucky Method/Algorithm/Operation/Differentiation/Integration/etc. is said to be any incorrect method or algorithm or operation etc. which leads to a correct result. The wrong calculation should be fun, somehow similarly to the students' common mistakes, or to produce confusions or paradoxes.

Can someone give an example of a Lucky Derivation, or Integration, or Lucky Solution to a Differential Equation?

As a particular case:
A number is said to be an *S. Lucky Number* if an incorrect calculation leads to a correct result, which is that number.
Is the set of all fractions, where such (or another) incorrect calculation leads to a correct result, finite or infinite?

Reference:

[1] Smarandache, Florentin, "Collected Papers" (Vol. II), University of Kishinev, 1997.

6) Construction of Elements of the **Square-Partial-Digital Subsequence**

The Square-Partial-Digital Subsequence (SPDS) is the sequence of square integers which admit a partition for which each segment is a square integer. An example is 506^2 = 256036, which has partition 256/0/36. C. Ashbacher showed that SPDS is infinite by exhibiting two infinite families of elements. We will extend his results by showing how to construct infinite families of elements of SSPDS containing desired patterns of digits.

Unsolved Question 1:
441 belongs to SSPDS, and his square 441^2 = 194481 also belongs to SSPDS.
Can an example be found of integers m, m^2, m^4 all belonging to SSPDS?

Unsolved Question 2:

It is relatively easy to find two consecutive squares in SSDPS, i.e. $12^2 = 144$ and $13^2 = 169$.
Does SSDPS also contain three or more consecutive squares?
What is the maximum length?

7) Prime-Digital Sub-Sequence

"Personal Computer World" Numbers Count of February 1997 presented some of the Smarandache Sequences and related open problems.
One of them defines the Prime-Digital Sub-Sequence as the ordered set of primes whose digits are all primes:
2, 3, 5, 7, 23, 37, 53, 73, 223, 227, 233, 257, 277, ...
H. Ibstedt used a computer program in Ubasic to calculate the first 100 terms of the sequence. The 100-th term is 33223.
Sylvester Smith [2] conjectured that the sequence is infinite. We also agree that this sequence is in fact infinite.

References:
[1] Mudge, Mike, "Smarandache Sequences and Related Open Problems", Personal Computer World, Numbers Count, February 1997.
[2] Smith, Sylvester, "A Set of Conjectures on Smarandache Sequences", in <Bulletin of Pure and Applied Sciences>, Delhi, India, Vol. 15E, No. 1, 1996, pp. 101-107.

8) Special Expressions

a) Perfect Powers in Special Expressions (I)

How many primes are there in the Special Expression:

$$x^y + y^x,$$

where $\gcd(x, y) = 1$? [J. Castillo & P. Castini]
K. Kashihara announced that there are only finitely many numbers of the above form which are products of factorials.
F. Luca proposed the following conjecture:
Let a, b, and c three integers with ab nonzero. Then the equation:
$ax^y + by^x = cz^n$, with $x, y, n \geq 2$, and $\gcd(x, y) = 1$,
has finitely many solutions (x, y, z, n).

b) Products of Factorials in Smarandache Type Expressions (II)

J. Castillo ["Mathematical Spectrum", Vol. 29, 1997/8, 21] asked how many primes are there in the Smarandache n-Expression:

$$x_1^{x_2} + x_2^{x_3} + \dots + x_n^{x_1},$$

where $n > 1$, $x_1, x_2, \dots, x_n > 1$, and $\gcd(x_1, x_2, \dots, x_n) = 1$?
[This is a generalization of the Smarandache 2-Expression: $x^y + y^x$.]

F. Luca announced a lower bound for the size of the largest prime divisor of an expression of type $ax^y + by^x$, where ab is nonzero, x, y >= 2, and gcd (x, y) = 1.

9) The General Periodic Sequence

Definition:
Let S be a finite set, and f : S ---> S be a function defined for all elements of S.
There will always be a periodic sequence whenever we repeat the composition of the function f with itself more times than card(S), accordingly to the box principle of Dirichlet.
[The invariant sequence is considered a periodic sequence whose period length has one term.]

Thus the General Periodic Sequence is defined as:

a1 = f(s), where s is an element of S;
a2 = f(a1) = f(f(s));
a3 = f(a2) = f(f(a1)) = f(f(f(s)));
and so on.

M. R. Popov particularized S and f to study interesting cases of this type of sequences.

10) n-Digit Periodical Sequences

a) The Two-Digit Periodic Sequence (I)

Let N1 be an integer of at most two digits and let N1' be its digital reverse. One defines the absolute value N2 = abs (N1 - N1'). And so on: N3 = abs (N2 - N2'), etc. If a number N has one digit only, one considers its reverse as Nx10 (for example: 5, which is 05, reversed will be 50). This sequence is periodic.
Except the case when the two digits are equal, and the sequence becomes:

N1, 0, 0, 0, ...

the iteration always produces a loop of length 5, which starts on the second or the third term of the sequence, and the period is 9, 81, 63, 27, 45 or a cyclic permutation thereof.

Reference:
[1] Popov, M.R., "Smarandache's Periodic Sequences", in <Mathematical Spectrum>, University of Sheffield, U.K., Vol. 29, No. 1, 1996/7, p. 15.

(The next periodic sequences are extracted from this paper too).

b) The n-Digit Smarandache Periodic Sequence (II)

Let N1 be an integer of at most n digits and let N1' be its digital reverse. One defines the absolute value N2 = abs (N1 - N1').

And so on: N3 = abs (N2 - N2'), etc. If a number N has less than n digits, one considers its reverse as N'x(10^k), where N' is the reverse of N and k is the number of missing digits, (for example: the number 24 doesn't have five digits, but can be written as 00024, and reversed will be 42000). This sequence is periodic according to Dirichlet's box principle.

The Smarandache 3-Digit Periodic Sequence (domain 100 <= N1 <= 999):

- there are 90 symmetric integers, 101, 111, 121, ..., for which N2 = 0;
- all other initial integers iterate into various entry points of the same periodic subsequence (or a cyclic permutation thereof) of five terms:

99, 891, 693, 297, 495.

The Smarandache 4-Digit Periodic Sequence (domain 1000<= N1 <= 9999):

- the largest number of iterations carried out in order to reach the first member of the loop is 18, and it happens for N1 = 1019;
- iterations of 8818 integers result in one of the following loops (or a cyclic permutation thereof): 2178, 6534; or 90, 810, 630, 270, 450; or 909, 8181, 6363, 2727, 4545; or 999, 8991, 6993, 2997, 4995;
- the other iterations ended up in the invariant 0.

(H. Ibstedt)

c) The 5-Digit and 6-Digit Smarandache Periodic Sequences (III)

Let N1 be an integer of at most n digits and let N1' be its digital reverse. One defines the absolute value N2 = abs (N1 - N1'). And so on: N3 = abs (N2 - N2'), etc. If a number N has less than n digits, one considers its reverse as N'x(10^k), where N' is the reverse of N and k is the number of missing digits, (for example: the number 24 doesn't have five digits, but can be written as 00024, and reversed will be 42000). This sequence is periodic according to Dirichlet's box principle, leading to invariant or a loop.

The Smarandache 5-Digit Periodic Sequence (domain 10000 <= N1 <= 99999):

- there are 920 integers iterating into the invariant 0 due to symmetries;
- the other ones iterate into one of the following loops (or a cyclic permutation of these): 21978, 65934; or 990, 8910, 6930, 2970, 4950; or 9009, 81081, 63063, 27027, 45045; or 9999, 89991, 69993, 29997, 49995.

The Smarandache 6-Digit Periodic Sequence (domain 100000 <= N1 <= 999999):

- there are 13667 integers iterating into the invariant 0 due to symmetries;
- the longest sequence of iterations before arriving at the first loop member is 53 for N1 = 100720;
- the loops have 2, 5, 9, or 18 terms.

d) The Subtraction Periodic Sequences (IV)

Let c be a positive integer. Start with a positive integer N, and let N' be its digital reverse. Put N1 = abs(N1' - c), and let N1' be its digital reverse. Put N2 = abs (N1' - c), and let N2' be its digital reverse. And so on. We shall eventually obtain a repetition.
For example, with c = 1 and N = 52 we obtain the sequence: 52, 24, 41, 13, 30, 02, 19, 90, 08, 79, 96, 68, 85, 57, 74, 46, 63, 35, 52, ... Here a repetition occurs after 18 steps, and the length of the repeating cycle is 18.

First example: c = 1, 10<= N <= 999.

Every other member of this interval is an entry point into one of five cyclic periodic sequences (four of these are of length 18, and one of length 9). When N is of the form 11k or 11k-1, then the iteration process results in 0.

Second example: $1 \le c \le 9$, $100 \le N \le 999$.
For c = 1, 2, or 5 all iterations result in the invariant 0 after, sometimes, a large number of iterations.
For the other values of c there are only eight different possible values for the length of the loops, namely 11, 22, 33, 50, 100, 167, 189, 200.
For c = 7 and N = 109 we have an example of the longest loop obtained: it has 200 elements, and the loop is closed after 286 iterations.
(H. Ibstedt)

e) The Multiplication Periodic Sequences (V)

Let c > 1 be a positive integer. Start with a positive integer N, multiply each digit x of N by c and replace that digit by the last digit of cx to give N1. And so on. We shall eventually obtain a repetition.
For example, with c = 7 and N = 68 we obtain the sequence:
68, 26, 42, 84, 68, ...
Integers whose digits are all equal to 5 are invariant under the given operation after one iteration.

One studies the One-Digit Multiplication Periodic Sequences only.
(For c of two or more digits the problem becomes more complicated.)
If c = 2, there are four term loops, starting on the first or second term.
If c = 3, there are four term loops, starting with the first term.
If c = 4, there are two term loops, starting on the first or second term (could be called Switch or Pendulum Sequence).
If c = 5 or 6, the sequence is invariant after one iteration.
If c = 7, there are four term loops, starting with the first term.
If c = 8, there are four term loops, starting with the second term.
If c = 9, there are two term loops, starting with the first term (pendulum).
(H. Ibstedt)

e) The Mixed Composition Periodic Sequences (VI)

Let N be a two-digit number. Add the digits, and add them again if the sum is greater than 10. Also take the absolute value of their difference. These are the first and second digits of N1. Now repeat this.
For example, with N = 75 we obtain the sequence: 75, 32, 51, 64, 12, 31, 42, 62, 84, 34, 71, 86, 52, 73, 14, 53, 82, 16, 75, ...
There are no invariants in this case. Four numbers: 36, 90, 93, and 99 produce two-element loops. The longest loops have 18 elements. There also are loops of 4, 6, and 12 elements.
(H. Ibstedt)

There will always be a periodic (invariant) sequence whenever we have a function $f : S \longrightarrow S$, where S is a finite set, and we repeat the function f more times than card(S).
Thus the General Periodic Sequence is defined as:
$a1 = f(s)$, where s is an element of S;
$a2 = f(a1) = f(f(s))$;
$a3 = f(a2) = f(f(a1)) = f(f(f(s)))$;
and so on.

11) New Sequences: The Family of Metallic Means

The family of Metallic Means (whom most prominent members are the Golden Mean, Silver Mean, Bronze Mean, Nickel Mean, Copper Mean, etc.) comprises every quadratic irrational number that is the positive solution of one of the algebraic equations

$$x^2 - nx - 1 = 0 \quad \text{or} \quad x^2 - x - n = 0,$$

where n is a natural number.

All of them are closely related to quasi-periodic dynamics, being therefore important basis of musical and architectural proportions. Through the analysis of their common mathematical properties, it becomes evident that they interconnect different human fields of knowledge, in the sense defined by Florentin Smarandache ("Paradoxist Mathematics").

Being irrational numbers, in applications to different scientific disciplines, they have to be approximated by ratios of integers -- which is the goal of this paper.

(Vera W. de Spinadel)

12) Some New Functions in the Number Theory

We investigate and prove the functions:

$S1 : N-\{0,1\} \longrightarrow N$, $S1(n) = 1/S(n)$;

$S2 : N^* \longrightarrow N$, $S2(n) = S(n)/n$

verify the Lipschitz condition, but the functions:

$S3 : N-\{0,1\} \longrightarrow N$, $S3(n) = n/S(n)$;

$Fs : N^* \longrightarrow N$,

$Fs(x) = \text{sigma}(S(p_i^x))$ for i from 1 to pi(x),

where p_i are the prime numbers not greater than x and

pi(x) is the number of them;

$\text{Theta} : N^* \longrightarrow N$,

$\text{Theta}(x) = \text{sigma } S(p_i^x)$, where p_i are prime numbers

which divide x;

$\overline{\text{Theta}} : N^* \longrightarrow N$,

$\overline{\text{Theta}}(x) = \text{sigma } S(p_i^x)$, where p_i are prime numbers

which do not divide x;

where S(n) is the Smarandache function for all six previous functions, verify the Lipschitz condition.

(V. Seleacu, S. Zanfir)

Reference:

[1] Mencze, M., "Smarandache Relationships and Subsequences", <Bulletin of Pure and Applied Sciences>, Delhi, India, Vol. 17E, No. 1, pp. 55-62, 1998.

13) Erdos-Smarandache Numbers:

2, 3, 5, 6, 7, 10, 11, 13, 14, 15, 17, 19, 20, 21, 22, 23, 26, 28, 29, 30, 31, 33, 34, 35, ...

Solutions to the diophantine equation P(n)=S(n), where P(n) is the largest prime factor which divides n, and S(n) is the classical Smarandache function: the smallest integer such that S(n)! is a multiple of n.

References:

[1] Erdos, P., Ashbacher C., Thoughts of Pal Erdos on Some Smarandache Notions, <Smarandache Notions Journal>, Vol. 8, No. 1-2-3, 1997, 220-224.

[2] Sloane, N. J. A., On-Line Encyclopedia of Integers, Sequence A048839.

14) n-ary Sieve:

1, 2, 4, 7, 9, 14, 20, 25, 31, 34, 44, ...

Keep the first k numbers, skip the k+1 numbers, for k = 2, 3, 4, ...

References:

[1] Le M., "On the Smarandache n-ary sieve", <Smarandache Notions Journal>, Vol. 10, No. 1-2-3, 1999, 146-147.

[2] Sloane, N. J. A., On-Line Encyclopedia of Integers, Sequences A048859, A007952.

General References (edited by C. Dumitrescu & M. Bencze):

1. Sloane, N. J. A., Plouffe, Simon, "The On-Line Encyclopedia of Integer Sequences", AT&T Bell Labs, Murray Hill, New Jersey, USA, 1995, online: superseeker@research.att.com ;
2. Mudge, Mike, "Some Sequences of Smarandache contrasted with a permutations problem relating to class/student allocation", in <Personal Computer World>, London, England, June 1995, pp. 674-5;
3. Lohon, O., Buz, Maria, University of Craiova Library, Letter No. 499, July 07, 1995.
4. Mudge, Mike, "Pseudo-Sequences (according to Florentin Smarandache) and Generalized Russian Multiplication", in <Personal Computer World>, London, England, August 1995, pp. 671;
5. Growney, JoAnne, Bloomsburg University, PA, "The most Humanistic Mathematician: Florentin Smarandache"
and Larry Seagull, "Poem in Arithmetic Space", in the <Humanistic Mathematics Network>, Harvey Mudd College, Claremont, CA, October 1995, # 12, p. 38 and pp. 38-40 respectively;
6. Le, Charles T., "The most paradoxist mathematician of the world", in <Bulletin of Number Theory>, March 1995, Vol. 3, No. 1;
7. Seagull, Larry, Glendale Community College, "Poem in Arithmetic Space", in <Abracadabra>, Salinas, CA, August 1995, Anul III, No. 34, pp.20-1.
8. Moore, Carol (Library Specialist), Wurzburger, Marilyn (Head of Specila Collections), Abstract of "The Florentin Smarandache papers" special collection, Call # SM SC SM-15, at Arizona State University, Tempe, AZ 85287-1006, Box 871006, Tel. (602) 965-6515, E-mail: icclmc@asuvm.inre.asu.edu , USA;

9. Zitarelli, David, abstract on C. Dumitrescu's "A brief history of the 'Smarandache Function'", in <Historia Mathematica>, Academic Press, USA, May 1995, Vol. 22, No. 2, p. 213, #22.2.22;
10. Alkire, Leland G., Jr., Editor of <Periodical Title Abbreviations>, Kennedy Library, Eastern Washington University, Cheney, Washington, Letter to R. Muller, April 1995;
11. Summary of R. Muller.s "Unsolved problems related to Smarandache Function" book, in <Zentralblatt fur Mathematik>, Berlin, 1995, 804-43, 11006;
12. Dumitrescu, C., "Functia Smarandache", in <Caiet de informare matematica>, 'Nicolae Grigorescu' College, Câmpina, May 1995, Anul XVII, No. 33, p. 976.
13. Melendez, Pedro, Bello Horizonte, Brazil, Proposed Problem 1, in <Caiet de informare matematic >, 'Nicolae Grigorescu' College, Câmpina, May 1995, Anul XVII, No. 33, p. 976;
14. Sharpe, D. W., Stuparu, A., Proposed Problem 2, in <Caiet de informare matematic >, 'Nicolae Grigorescu' College, Câmpina, May 1995, Anul XVII, No. 33, pp. 976-7;
15. Rodriguez, J., Sonora, Mexico, Proposed Problem 3, in <Caiet de informare matematic >, 'Nicolae Grigorescu' College, Câmpina, May 1995, Anul XVII, No. 33, p. 977;
16. Tauscher, Ken, Sydney, Australia, Proposed Problem 4, in <Caiet de informare matematica>, 'Nicolae Grigorescu' College, Câmpina, May 1995, Anul XVII, No. 33, p. 977;
17. Index of <Mathematical Spectrum>, University of Sheffield, England, Summer 1995, Vol. 25-7, p. 71;
18. Abstract on <Smarandache Function Journal>, in <Ulrich's International Periodicals Directory>, USA, 1994-5, Mathematics 3783;
19. Burton, Emil, Pedagogical College Craiova, Letter of May 18, 1995;
20. Fons Libris, Pretoria, South Africa, Letter to the Publisher, May 1995;
21. Sakharova, V., <Referativnyi Zhurnal>, Moscow, Russia, Letter to R. Muller, July 20, 1995, No. 64-645/11;
22. Dumitrescu, C., Seleacu, V., editors, "Some notions and questions in the number theory", Erhus Univ. Press, Glendale, Arizona, 1994;
22. Erdos, Paul, Hungarian Academy of Sciences, Budapest, Letter to T. Yau, June 18, 1995;
23. Erdos, Paul, Hungarian Academy of Sciences, Budapest, Letter to T. Yau, June 25, 1995;
24. Castillo, Jorje, Mesa Community College, Letter to Harry B. Tunis, director of publications, editor of <Mathematics Teaching>, Reston, VA, USA, July 12, 1995;
25. Lungu, Al., Bonn, Germany, Letter of April 04, 1995;
26. Vlad, Mihail I., "Nota Editorului", in <Emigrant la Infinit>, Ed. Macarie, Târgoviste, Romania, 1995;
28. Tomikawa, Hisaya, Magalog Project Group, Tokyo, Japan, abstract of the <Smarandache Notions> journal, August 1995;
29. Mudge, Mike, London, Letter to R. Muller, August 1995;
30. Erdos, Paul, Hungarian Academy of Sciences, Budapest, Letter to T. Yau, August 7, 1995;
31. Hazewinkel, M., Stichting Mathematisch Centrum, Amsterdam, Letter to I. Balacenoiu, July 4, 1995;
32. Sloane, N. J. A., AT&T Bell Labs, Murray Hill, New Jersey, USA, njas@research.att.com, E-mails to R. Muller, February - August 1995;
33. Mudge, Mike, London, Letter to R. Muller, August 20, 1995;

34. Ashbacher, Charles, Decisionmark, Cedar Rapids, Iowa, "An Introduction to the Smarandache Function", 60 pp., Erhus University Press, Vail, Az, USA, 1995;
35. Popescu, F., "Remarks on Smarandache type sequences", Eighth SIAM Conference on Discrete Mathematics, June 17-20, 1996, Johns Hopkins University, Baltimore, Maryland;
36. Ecker, Michael W., Editor of <Recreational & Educational Computing>, Clarks Summit, PA, E-mail of 22-SEP-1995;
37. Mudge, Michael Richard, Dyfed, U. K., Letter to R. Muller, 09-17-1995;
38. Rose, W. A., Solution to Problem 26.5 [(a), (b), (c)], in <Mathematical Spectrum>, Sheffield University, U. K., Vol. 26, No. 4, 124-5, 1993-4;
39. Ecker, Michael W., Editor of <Recreational & Educational Computing>, Clarks Summit, PA, Two E-mails of 26-SEP-1995;
40. Popescu, Marian, "Implementation of the Smarandache Integer Algorithms", SIAM Symposium on Discrete Mathematics, 28-30 January 1996;
41. Andrei, M., Dumitrescu, C., Seleacu, V., Tutescu, L., Zanfir, St., "Some remarks on the Smarandache function", in <Bulletin of Pure and Applied Sciences>, Bombay, India, Vol. 14E, No. 1, 35-40, 1995;
41. Mudge, Michael Richard, Letter to S. Abbott, The Editor of <The Mathematical Gazette>, U. K., October 7, 1995;
42. Mudge, Michael Richard, Letter to David Wells, The Author of the <Penguin Dictionary of Interesting and Curious Numbers>, U. K., October 8, 1995;
43. Mudge, Michael Richard, "A paradoxal mathematician, his function, paradoxist geometry, and class of paradoxes", manuscript, October 7, 1995;
44. Mudge, Michael Richard, "A paradoxal mathematician, his function, paradoxist geometry, and class of paradoxes", manuscript, October 7, 1995;
45. Mudge, Michael Richard, "A piece of nonsense (anagram)", manuscript, October 7, 1995;
46. Ashbacher, Charles, Problem A, in <Personal Computer World>, London, October 1995;
47. Radu, I. M., Problem B, in <Personal Computer World>, London, October 1995;
48. Stiuparu, A., Problem C, in <Personal Computer World>, London, October 1995;
49. Mudge, Mike, "The Smarandache Function revisited, plus a reader's miscellany", in <Personal Computer World>, London, October 1995;
50. Mudge, Mike, "The Squambling Function and related numerical pastimes", in <Personal Computer World>, London, 305, November 1995;
51. Ashbacher, Charles, "The Smarandache function - 1", Letter to the Editor, in <The Mathematical Spectrum>, editor D. W. Sharpe, University of Sheffield, Vol. 28, No. 1, 20, 1995/6;
52. Seagull, L., "The Smarandache function-2", Letter to the Editor, in <The Mathematical Spectrum>, editor D. W. Sharpe, University of Sheffield, Vol. 28, No. 1, 20, 1995/6;
53. Ashbacher, Charles, "The Smarandache function and the Fibonacci relationship", Letter to the Editor, in <The Mathematical Spectrum>, editor D. W. Sharpe, University of Sheffield, Vol. 28, No. 1, 20, 1995/6;
54. Mudge, Mike, Dyfed, U. K., Letter to R. Muller, October 8, 1995;
55. Hernandez, Mario, Vail, USA, E-mails to Paul Leyland, October 16-20, 1995;

56. Leyland, Paul, Oxford University Computing Services, Oxford, U. K., E-mails to Mario Hernandez, October 16-20, 1995;
57. Mitroiescu, I., "The Smarandache's class of paradoxes applied in computer science", in <Abstracts of papers presented to the American Mathematical Society>, New Jersey, USA, Issue 101, Vol. 16, No. 3, pp. 651 & 696, Summer 1995;
58. Ashbacher, Charles, Letter to R. Muller, October 26, 1995;
59. Muller, R., Letter to Elias Toubassi, University of Arizona, Tucson, October 30, 1995;
60. Vulturescu, George, "Poetul român, stabilit în Arizona ...", in <Poesis>, Satu Mare, Romania, No. (69) 9, p. 17, September 1995;
61. Dumitrescu, Constantin, "Solved and Unsolved Problems related to the Smarandache Function", The Second Asian Mathematics Conference (AMC '95), Nakhon Ratchasima, Thailand, October 17-20, 1995;
62. Sandor, Jozsef, Forteni, Harghita, "On certain inequalities involving the Smarandache function", unpublished article;
63. McGray, JoAnne, Letter to Marcela Popescu, University of Craiova, November 18, 1995;
64. Le, Ch. T., Letter to Arthur F. Lenehan, <Leadership> journal, Fairfield, NJ, November 21, 1995;
65. Zitarelli, David E., Letter to Mario Hernandez, November 1995;
66. Kashihara, Kenichiro, Kanagawa (Japan), Letter to Peter Castini, October 24, 1995;
67. Parihar, C. L., Indian Academy of Mathematics, Indore, India, Letter to Ch. T. Le, September 9, 1995;
68. McGray, JoAnne, Letter to Dustbooks, Paradise, CA, November 16, 1995;
69. Bruckman, Paul S., Solution to problem H-490, in <The Fibonacci Quarterly>, Vol. 33, No. 5, November 1995, pp. 476-7;
and also M. Ballieu, A. Dujella, N. Jensen, H.-J. Seiffert, A. Stuparu;
70. 'First International Conference on Smarandache Type Notions in Number Theory', August 21-24, 1997,
organizers: C. Dumitrescu & V. Seleacu, Dept. of Math., Univ. of Craiova, Romania
[see <Notices of the American Mathematical Society>, Vol. 42, No. 11, November 1995, p. 1366];
also the meeting was sponsored by UNESCO;
71. Sassoon, George, Wiltshire, England, Letter to Mike Mudge, June 15, 1995;
72. Sassoon, George, "Program SMARAND1 to generate sequences of numbers in base B, for increasing bases, and to factor them and to get the procentage of primes" (in UBASIC), unpublished article;
73. Radu, I.M., Problem PP60, in <Octogon>, Bra ov, Vol. 3, No. 1, April 1995, p. 50;
74. Yau, T., Problems PP66 & PP67, in <Octogon>, Bra ov, Vol. 3, No. 1, April 1995, p. 51;
75. Andrei, M., Dumitrescu, C., Seleacu, V., Tu escu, L., Zanfir, t., "Some Remarks on the Smarandache Function", in <Octogon>, Bra ov, Vol. 3, No. 1, April 1995, pp. 23-7;
76. Abbott, Steve, Farlingaye High Scool, England, Review of "The Smarandache Function Journal 4-5 (1)", in <The Mathematical Gazette>, London, Vol. 79, No. 4-86, November 1995, p. 608;
77. Mudge, Michael R., Dyfed, U.K., "Introducing the Smarandache-Kurepa and Smarandache-Wagstaff Functions", manuscript, 11-19-1995;
78. Mudge, Michael R., Dyfed, U.K., "The Smarandache Near-To-Primorial Function", manuscript, 11-19-1995;

79. Mudge, Michael R., Dyfed, U.K., Letter to R. Muller, 11-19-1995;
80. Suggett, Gareth, U.K., "Primes between consecutive Smarandache numbers", unpublished paper, November 1995;
81. B l cenoiu, Ion & Seleacu, Vasile, "Some properties of the Smarandache Functions of the Type I", in <Octogon>, Bra ov, Vol. 3, No. 2, October 1995, pp. 27-30;
82. Ibstedt, Henry, "Base Solution (The Smarandache Function)", Broby, Sweden, November 30, 1995, manuscript;
83. Faure, H., Centre de Mathematique et d'Informatique, Universite de Provence, Marseille, France, Letter to C. Dumitrescu, September 19, 1995.
84. Policarp, Gane & Stadler, Mihail, "Istoria Matematicii / Anivers rile din anul 1995", in <Caiet de Informare Matematic >, Câmpina, Anul XVII, No. 34, December 1995, p. 1013;
85. Tutescu, Lucian, "Functia lui Smarandache -- o noua functie în teoria functiilor", <Programul manifestarilor organizate cu prilejul împlinirii a 100 ani de la aparitia primului numar al revistei 'Gazeta Matematic ', 1895-1995>, Inspectoratul colar al Jude ului Alba, Societatea de tiin e Matematice din România, Sala de edin e a Liceului Militar 'Mihai Viteazul', Alba Iulia, Symposium, 18-20 February 1995;
86. Corduneanu, C., "Personalia", in <Liberthas Matematica>, Texas State University, Arlington, Vol. XV, p. 241, 1995;
87. Popescu, Titu, Karlsfeld, Germany,
and Larry Seagull, "Poem in Arithmetic Space", pp. 134-7 in the book <Estetica Paradoxismului> (143 pages), Editura Societ ii Tempus, Bucharest, 1995;
88. Rodriguez, J., Sonora, Mexico, Problem 5, <Foaie Matematic >, Chi in u, Moldova, Column of <Problems with the Smarandache Function> edited by V. Suceveanu, No. 4, p. 37, 1995;
89. Melendez, P., Belo Horizonte, Brazil, Problem 6, <Foaie Matematic >, Chi in u, Column of <Problems with the Smarandache Function> edited by V. Suceveanu, No. 4, p. 37, 1995;
90. Yau, T., Pima Community College, Tucson, Az, Problem 7, <Foaie Matematic >, Chi in u, Column of <Problems with the Smarandache Function> edited by V. Suceveanu, No. 4, p. 37, 1995;
91. Seagull, L., Glendale Community College, USA, Problem 9, <Foaie Matematic >, Chi in u, Column of <Problems with the Smarandache Function> edited by V. Suceveanu, No. 6, p. 40, 1995;
92. Stuparu, A., Vâlcea, Romania, Problem 10, <Foaie Matematic >, Chi in u, Column of <Problems with the Smarandache Function> edited by V. Suceveanu, No. 6, p. 40, 1995;
93. Crudu, Dumitru, "Florentin Smarandache sau înc p ânarea unui exilat", <Vatra>, Tg. Mure , Romania, Anul XXV, No. 295, p. 92, October 1995;
94. Barbulescu, Radu, "Florentin Smarandache: 'Exist împotriva mea'", <Observator>, Munchen, Germany, Anul VIII, No. 2-4 (27-9), p. 72, Martie-Decembrie 1995;
95. Suggett, Gareth, West Sussex, England, Letter to Dr. Muller, February 03, 1996;
96. Ibstedt, Henry, Issy les Moulineaux, France, Letter to R. Muller, February 1, 1996;
97. Radescu, N., Craiova, Letter to A. K. Sharma, editor of <Bulletin of Pure and Applied Sciences>, Section E, Bombay, India, December 11, 1995;
98. Ibstedt, Henry, Issy les Moulineaux, France, Letter to R. Muller, February 7, 1996;

99. Mudge, Michael R., Dyfed, U.K., "Review of Numbers Count - 146-, PCW June 1995", in <Personal Computer World>, January 1996, p. 333;
100. Castillo, Jose, and Hernandez, Mario, "Problem MH", in <Personal Computer World>, London, February 1996, p. 337;
101. C.C., "Un român lanseaza noi teorii în matematica", in <Jurnalul National>, Bucharest, Nr. 806, January 22, 1996.